

detached building, the site of the building deep drained, and the rest of the land thoroughly drained, is shown by the report to be met by an annual charge for twenty years of 18s. 3d. in light soils, 1l. 1s. 4d. in medium soils, and 1l. 6s. 0d. in heavy soils. The drainage of one acre of land for four semi-detached residences would be met by an annual charge per house for twenty years of 3s. 11d., 4s. 7d., or 5s. 7d.

The cost of drainage will be lessened by the use of the draining-plough, when the difficulty which still attends it in respect to giving the pipes, with certainty, the right inclination, is overcome, and the pipes will be made more cheaply before long. As yet, the system is a new one. Until the time of Smith, of Deanston, drainage was applied only in cases where springs and coxes made themselves evident, and in the first instance mistakes were of course fallen into. For example, his minor drains were of no less than 18 inches sectional capacity. "Now," says the report before us, "a single drain of this capacity will, when running half full at the outlet, discharge in twenty-four hours about six hundred tons of water, equal to a rain-fall of nearly 6 inches in depth on an acre. 1 inch in depth is a very heavy fall in a day, and it generally takes two days for the water after rain to drain fully from deep drained land; yet Mr. Smith provided eighteen such drains per acre, having a total sectional area of 324 inches, and capable of discharging when only half filled, 4½ inches of rain-fall from an acre in a single hour. That is in six hours more than the whole annual rain-fall of the London district." Every facility for draining land throughout the country should be afforded. An excess of water in soil is hurtful,—first, by diminishing the amount of air beneath the surface, which air is of the greatest possible consequence in the nutrition of plants; and, secondly, by reducing the temperature of the soil at a time when, for the purposes of vegetation, it ought to be the warmest. Experience has settled the question in an agricultural point of view: the sanitary part of the subject has been less considered. By drainage the climate will be ameliorated, and many diseases prevented. It is really a very important matter, and we hope this publication of the Board of Health will give a fresh impetus to the prosecution of it throughout the country. It has long been admitted that he who makes two blades of corn grow where only one grew before, is a benefactor to his species. *Thorough drainage does more than this. It tends to lengthen life as well as increase the means of living.*

#### MOSAIC WORK; ENAMEL; EARLY ARTISTS IN ENGLAND.

##### REPARATION OF THE TOMBS IN WESTMINSTER ABBEY.

At the meeting of the Institute of Architects on the 22nd ult. (referred to in our last number) Mr. Digby Wyatt made some observations on the various artistic processes which the monuments in question displayed, and especially that of mosaic. The mosaics of Westminster Abbey, he said, were of two kinds, "*Opus Grecanicum*" and "*Opus Alexandrinum*," the former being the glass mosaic employed in the tomb of Henry III. and the latter the marble and porphyry work of the two pavements. The first stage of mosaic, it should be remembered, was when the practice was entirely Greek; when the Greek artists, on their expulsion from Byzantium, under the iconoclastic emperors, formed a school at the church of Santa Maria, in Cosmedino, at Rome. That school existed

till about the year 800, when the troubled state of the Church prevented the further development of the art, and there ensued a complete lapse for some centuries in Italy. About the year 1150, Desiderius, one of the "abbati" of the great Benedictine establishment at Monte Casino, sent four workmen from Greece, in order "that the art might not be lost in Italy, and that the young men of that country might learn the mode of manipulation." Shortly afterwards the Greek work began to be imitated in Italy and Sicily, though more particularly at Rome and Florence. Andrea Tafi, Gaddo Gaddi, and Pietro Cavallini, became skilful workmen in Italy during the thirteenth century, when the second series of great mosaics—those of Santa Maria Maggiore, San Giovanni in Laterano, &c. were carried out. This series differed materially from the former; and it was in this latter style of mosaic that all the examples in Westminster Abbey were executed. These specimens were peculiarly interesting, because, independently of the inscriptions upon them—which proved their date beyond any doubt whatever—the evidence afforded by their style showed that they were works of the manner and period referred to, and displayed the English sympathy of the thirteenth century with Italian art. The pavement of Becket's Crown, in Canterbury Cathedral, in addition to portions of "*Opus Alexandrinum*," comprised a very perfect specimen of old Florentine mosaic, or "*lavoro di Commesso*," which was quite a different kind of work; the best specimens of it being preserved in the Baptistery at Florence, and the Church of San Miniato on the hill above the same city. The latter description of mosaic was formed by drawing the desired pattern on the surface of the marble, and chasing it completely out; and then cutting out of another piece of marble of a different kind the pattern necessary to fill up the cavities of the former. This kind of mosaic was carried still further at Sienna by Beccafumi, who attempted to produce effects of light and shade by the use of different tints of marble; and it ultimately led to the regular Florentine mosaic, in which, in addition to attempts to realise chiaro-scuro, colour was introduced by the employment of different stones, and even jewels. In the earlier specimens of Florentine mosaic, the only colours were red, black, green, and white. In addition to the mosaics, the tombs at Westminster exhibited some very curious specimens of Limoges enamel. At the risk of repeating what might be known to many present at the meeting, he might be allowed to observe, that at Constantinople there existed originally a peculiar style of filagree enamel on thin sheets of gold, to which gold threads being attached formed little chambers, into which powdered glass of different colour was put; and the whole being placed in a "muffle" furnace, the glass was fused so as to hold the threads permanently in their proper places, and to convert the surface into a beautiful minute glass-mosaic picture. Specimens of this kind of enamel were exported from Constantinople to different countries of Europe; and examples of it might be seen in England, in the famous Alfred Jewel, a brooch in the Hamilton collection of gems in the British Museum, &c. The style of enamel getting into France, was imitated by the workmen there; who, however, retained the old Gaulish practice, which was of a kind similar to that which might be seen on harness, and other ornaments discovered in barrows. The above kind of enamel was formed by the following process: a copper ground was taken, and lines incised in it; powdered glass was then put into the cavities, and the whole being fused and polished, and the metal afterwards gilded, the different lines and parts cut out glowed with enamel colours, in a manner similar to that which had before existed in Byzantine work. Mr. Wyatt then pointed out a peculiar connection which existed between Byzantium and Limoges, through the Venetians having employed Byzantine workmen to execute mosaic and filagree enamels. In this last style their most important commission was the well-known Palla d'Oro, or

Pallio of St. Mark's, ordered about the year 900, by the Doge Orseolo, which was supposed to have been executed in imitation of the altar frontal of St. Sophia, at Constantinople. At the end of the twelfth century, the Venetians had considerable intercourse with France, and established at Limoges a depot for the merchandise they sent from Venice, such as embroidery, spices, and other rich objects from Greece and the East, which reached Limoges by way of Marseilles. There still existed at Limoges the streets of the Venetian merchants; and it was a remarkable fact that the very Doge Orseolo, who ordered the altar frontal at Venice, came afterwards and lived at Limoges. Thus, the French of Limoges produced, from a combination of the old Gaulish enamel and that of Byzantium, the peculiar material known as Limoges enamel—an example of which was admirably shown in the little feretory belonging to Mr. Hope, exhibited by Mr. Donaldson. The principal application of enamel, illustrated by the tombs at Westminster, was that of forming the effigy of the deceased in wood, and overlaying it with plates of metal, having incised lines, in which the enamel patterns were inserted. The tomb of William de Valence, Earl of Pembroke, was, perhaps, one of the most interesting examples in this country. The figure of St. Edward, on the side of his feretory, as has been observed by Mr. Scott, was probably carried out in Limoges enamel; for it was not to be imagined that the tomb of William de Valence was a singular case: there was a complete effigy of Walter de Merton, Bishop of Rochester, executed in enamel by workmen who came over expressly from Limoges, and set it up in the cathedral. Mr. Wyatt referred to the beautiful altar frontal in the south ambulatory, which he described as completely Florentine in its character and in the details of its fabrication. Other interesting processes might be referred to as illustrated in Westminster Abbey, the monuments in that edifice furnishing a complete history of decoration, as applied to textile fabrics and embroidery in this country. With regard to the nationality of the different workmen employed upon these monuments—remembering what Mr. Cockerell had written upon the subject—it might be observed that Henry III. was, to a certain extent, identified, as to time, with Nicola di Pisa, who was regarded as the great reformer of art in Italy. Before the time of that great artist, however, many important works had been executed by the old Lombard school of art, particularly in the districts of Milan, Pavia, and Lucca. Of this school were the Cosmachi, the Freemasons of that district; who, as Mr. Hope stated, and as it was generally believed, connected themselves with other bodies in Europe, and dispersed themselves in various directions, carrying out important works wherever they went. If it were not for the passing action of some such body, it would be difficult to account for the singular appearance in France of a strange sort of Early English style; agreeing in style with that of buildings executed by Nicola di Pisa, by the Cosmachi at Rome, by Masaccio at Naples, and other artists anterior and immediately posterior to the year 1300. The examples of this peculiar style were few, and were found in adjacent localities, exactly as if some passing body had visited them, and left its impress, and moved on. It might be supposed that they had visited England, and brought with them a certain amount of Early English. Indeed, he could not otherwise account for the peculiar appearance of the ornamental sculpture of that period. Henry III. ascended the throne in 1216; and, during his boyhood, was for some time involved in trouble and warfare. At a later period, however, he appeared to have engaged in the production of works of art. Now, in considering the question, by whom these works were carried out, it should be remembered that the King was continually quarrelling with his barons about the number of foreigners (Poitevins and Italians especially) he brought into the country. The Popes of that time insisted on their right to institute to all the churches in England; and the monastic orders in this country were